

REMARKS

Claims 1, 3-6, 8, 10-15, 17, 18, 20, 22-25, 27, and 28 have been amended.

Claim 7 has been cancelled without prejudice.

Claims 1-6 and 8-34 are currently pending in this application.

Claims 1, 12, 14, 18, 24, 25, and 29 are in independent format.

New Claims 29-35 have been added.

1. Allowable Claims

The Examiner has stated that Claims 12, 13, 19-23, and 25-27 are objected to as being dependant upon a rejected base claim, but would be allowable if rewritten in independent form.

The Examiner has further stated that Claim 18 would be allowable once the objections to the claim for informalities set forth above are overcome, as Claim 18 discloses a memory module maintaining a plurality of test subject records for display on the display screen, for which no prior art could be found teaching or suggesting the claimed subject matter. (10/28/03 Office Action, Page 9, ¶14.)

Claim 12 has been amended to be in independent form, include all of the limitations of Claims 1 and 11, from which Claim 12 originally depended. Accordingly, Claim 12 is now believed allowable.

Claim 13 depends directly from Claim 12, and accordingly is seen as allowable for the same reasons as Claim 12.

Independent Claim 18 has been amended to correct the informalities identified by the Examiner. Accordingly Claim 18 is now believed allowable.

Dependent Claims 19-23 depend directly or indirectly from Claim 18, and accordingly are seen as allowable for the same reasons as Claim 18.

Claim 25 has been amended to be in independent form, including all of the limitations of Claim 24, from which Claim 25 originally depended. Accordingly, Claim 25 is now believed allowable.

Dependent Claims 26 and 27 depend directly or indirectly from Claim 25, and accordingly, are seen as allowable for the same reasons as Claim 25.

2. Rejections Under 35 U.S.C. § 102(b)

a. Claims 1-4

The rejection of Claims 1-4 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,601,091 to *Dolphin* is respectfully traversed. The Examiner's stated basis for the rejection is that the '091 *Dolphin* patent discloses the components of the claimed invention as shown at Col. 4, lines 9-28; Col. 6, lines 43-65; Col. 7, lines 5-17 and 56-67; and Col. 8, lines 1-10.

The '091 *Dolphin* patent discloses an auditory testing device which uses a signal processor to generate a stimulus signal to a patient, and to process a first response to the provide an evoked otoacoustic emissions signal and to process a second response to provide an auditory response signal, i.e., the signal processor is configured to generate a single stimulus signal and to obtain two response signals there from, which are utilized in subsequent processing. (See: Col. 6, lines 46-58; Col. 8, lines 10-32). In essence, the '091 *Dolphin* patent discloses a device which provides for simultaneous otoacoustic auditory emission and auditory brainstem response testing.

In contrast, the auditory testing device of the present invention is not configured to utilize a single stimulus signal to trigger patient response signals for two or more different auditory test procedures. Independent Claim 1 has been amended to clarify that each auditory test procedure has an associated stimulus signal and to recite subject matter similar to that of allowable Claim 18, i.e., further include the limitation of a memory module housed by the hand-held enclosure, which is operatively connected to the signal processor and is configured to maintain at least one test subject record. The '901 *Dolphin* patents fails to disclose the inclusion of a memory module in a hand-held auditory testing device for maintaining at least one test subject record. Accordingly, Claim 1, as amended, is believed allowable over the prior art of record under 35 U.S.C. § 102(b).

Dependant Claims 2-4, as amended, each depend directly from Claim 1, and accordingly, each include all of the limitations of parent Claim 1. Therefore, dependent Claims 2-4 are believed allowable over the prior art of record under 35 U.S.C. § 102(b) for the same reasons as independent Claim 1 from which they depend.

b. Claim 24

The rejection of Claim 24 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,267,571 to *Zurek et al.* is respectfully traversed. The Examiner's stated basis for the rejection is that the '571 *Zurek et al.* patent discloses a method for testing adequacy of hearing utilizing data frames as shown at Col. 4, lines 34-48 and Col. 5, lines 20-62.

The '571 *Zurek et al.* patent discloses a method for testing which appears to utilize data in frames, and which generates a finished result from a set of frames by

summing the complex fast Fourier transforms computed from each acceptable frame of data until a predetermined number of frames have been acquired. (Col. 5, lines 37-56). The '571 *Zurek et al.* patent does not disclose a method for auditory testing including the step of averaging slid or shifted data from a previous data frame with data from a current frame to improve performance over a standard linear averaging. This difference is clearly seen in Figure 3 of the '571 *Zurek et al.* patent, wherein if the transient noise level of a frame of data is below a threshold (Box 44), the complex FFT of the data frame is simply added to the previously stored data (Box 46). This process is repeated until the desired number of valid data frames have been acquired and summed. (Box 47). No shifting, sliding, or offsetting of the data within a frame is carried out or disclosed in the '571 *Zurek et al.* patent.

In contrast, Claim 24, as amended, sets forth a method for auditory testing which includes the step of averaging data in a current frame with the data from at least one previous frame, wherein the data from the previous frame or frames is "slid", shifted, or offset by a predetermined number of data points, and padded with zero values where required. (See: Page 11, lines 14-29; Page 14, lines 1-8).

Accordingly, Claim 24, as amended, is not anticipated by the '571 patent to *Zurek et al.* under 35 U.S.C. § 102(b), and is believed allowable.

3. Rejections Under 35 U.S.C. § 103(a)

a. Claim 5

The rejection of Claim 5 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin* as applied to Claim 1 above, and further in view of U.S. Patent No. 5,868,682 to *Combs, et al.* is respectfully traversed.

Dependant Claim 5, as amended, depends directly from Claim 1, and accordingly, includes all of the limitations of parent Claim 1. Therefore, dependent Claim 5 is believed allowable over the prior art of record under 35 U.S.C. § 103(a) for the same reasons as independent Claim 1 from which it depends.

b. Claim 6

The rejection of Claim 6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin* in view of U.S. Patent No. 5,868,682 to *Combs, et al.*, as applied to Claim 5 above, and further in view of U.S. Patent No. 5,197,332 to *Shennib* is respectfully traversed.

Dependant Claim 6, as amended, depends directly from Claim 1, and accordingly, includes all of the limitations of parent Claim 1. Therefore, dependent Claim 5 is believed allowable over the prior art of record under 35 U.S.C. § 103(a) for the same reasons as independent Claim 1 from which it depends.

c. Claims 7-10

The rejection of Claims 7-10 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin* in view of U.S. Patent No. 5,868,682 to *Combs, et al.*, and U.S. Patent No. 5,197,332 to *Shennib* as applied to Claim 6 above, and further in view of U.S. Patent No. 5,267,571 to *Zurek et al.* is respectfully traversed.

Claim 7 has been canceled without prejudice, and the rejection thereof is respectfully rendered moot.

Dependant Claims 8-10, as amended, depend either directly or indirectly from Claim 1, and accordingly, each includes all of the limitations of parent Claim 1. Therefore, dependent Claims 8-10 are believed allowable over the prior art of record under 35 U.S.C. § 103(a) for the same reasons as independent Claim 1 from which they depend.

d. Claim 11

The rejection of Claim 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin* as applied to Claim 1, and further in view of U.S. Patent No. 5,267,571 to *Zurek et al.* is respectfully traversed.

Dependant Claim 11, as amended, depends directly from Claim 1, and accordingly, includes all of the limitations of parent Claim 1. The amendments to Claim 11 further clarify that the signal processor is configured to perform a time domain sum and average over time for obtaining an otoacoustic auditory emission signal detection using a *offset* frame overlap method. As set forth above, the '571 *Zurek et al.* patent discloses utilizing data in frames, and generates a finished result from a set of frames by summing the complex fast Fourier transforms computed from each acceptable frame of data until a predetermined number of frames have been acquired. (Col. 5, lines 37-56). The '571 *Zurek et al.* patent does not disclose a signal processor for auditory testing configured to use offset, slid, or shifted frame data to improve performance over a standard linear averaging.

Therefore, dependent Claim 11 is believed allowable over the prior art of record under 35 U.S.C. § 103(a) for both the same reasons as independent Claim 1 from which it depends, and because the cited combination of prior art, i.e. the '901 *Dolphin*

patent and the '571 *Zurek et al.* patent, fails to teach or suggest to one of ordinary skill in the art a signal processor configured to perform a time domain sum and average over time for obtaining an otoacoustic auditory emission signal detection using a *offset* frame overlap method.

e. Claims 14-17

The rejection of Claims 14-17 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin*, U.S. Patent No. 5,267,571 to *Zurek et al.*, and in view of U.S. Patent No. 5,738,633 to *Christiansen* is respectfully traversed.

As amended, independent method Claim 14 requires the step of averaging a digital signal data over a predetermined number of sequential frames, wherein data from sequentially preceding frames is slid by a predetermined number of data points prior to the averaging. As set forth above, the '571 *Zurek et al.* patent discloses utilizing data in frames, and generates a finished result from a set of frames by summing the complex fast Fourier transforms computed from each acceptable frame of data until a predetermined number of frames have been acquired. (Col. 5, lines 37-56). The '571 *Zurek et al.* patent does not disclose a method for auditory testing including the step of averaging slid or shifted data from a previous data frame with data from a current frame to improve performance over a standard linear averaging. This is clearly seen in Figure 3 of the '571 *Zurek et al.* patent, wherein if the transient noise level of a frame of data is below a threshold (Box 44), the complex FFT of the data frame is simply added to the previously stored data (Box 46). This process is repeated until the desired number of valid data frames have been acquired and summed. (Box 47). No shifting, sliding, or

offsetting of the data within a frame is carried out or disclosed in the '571 *Zurek et al.* patent.

Therefore, independent Claim 14 is believed allowable over the prior art of record under 35 U.S.C. § 103(a) because the cited combination of prior art, i.e. U.S. Patent No. 5,601,901 to *Dolphin*, U.S. Patent No. 5,267,571 to *Zurek et al.*, and U.S. Patent No. 5,738,633 to *Christiansen*, fails to teach or suggest to one of ordinary skill in the claimed method including the step of averaging a digital signal data over a predetermined number of sequential frames, wherein data from sequentially preceding frames is slid by a predetermined number of data points prior to the averaging.

Dependant Claims 15-17, as amended, depend either directly or indirectly from Claim 1, and accordingly, each includes all of the limitations of parent Claim 14. Therefore, dependent Claims 15-17 are believed allowable over the prior art of record under 35 U.S.C. § 103(a) for the same reasons as independent Claim 14 from which they depend.

f. Claim 28

The rejection of Claim 28 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,601,901 to *Dolphin* in view of U.S. Patent No. 5,868,682 to *Combs, et al.* is respectfully traversed.

Claim 28 has been amended to be in dependant form, depending from Claim 1. Therefore, dependent Claim 28 is believed allowable over the prior art of record under

35 U.S.C. § 103(a) for the same reasons as independent Claim 1 from which it depends.

4. New Claims

New independent Claim 29 and new dependent Claims 30-34, which depend from independent Claim 29 have been added. New independent Claim 29 sets forth an auditory testing device and recites subject matter similar to that of allowable Claim 18, i.e., a memory module housed by the hand-held enclosure, which is operatively connected to the signal processor and is configured to maintain at least one test subject record. Independent Claim 29 further requires that a signal processor which is configured to process otoacoustic emission signals received through an input/output interface using an offset frame overlap method to reduce uncorrelated noise present in results associated with said otoacoustic emissions test procedure. (See: Page 11, lines 14-29; Page 14, lines 1-18).

Accordingly, new independent Claim 29 is believed allowable over the prior art of record for the same reasons as allowable Claim 18, and for the additional reason that none of the prior art, including U.S. Patent No. 5,267,571 to *Zurek et al.*, discloses either individually or in combination, the use of an offset frame overlap method to reduce uncorrelated noise present in results associated with said otoacoustic emissions test procedure.

Dependant Claim 30 recites the inclusion of a display device. (See: Page 8, lines 1-5).

Dependant Claim 31 recites the inclusion of an otoacoustic auditory emissions interface as one of the input/output interfaces of the device of Claim 29. (See: Page 8, line 25 – Page 9, line 2).

Dependant Claim 32 recites that the otoacoustic auditory emissions interface of Claim 31 may be configured for otoreflectance measurements. (See: Page 9, lines 2-4).

Dependant Claim 33 recites the inclusion of an auditory brainstem response interface as one of the input/output interfaces of the device of Claim 29. (See: Page 9, lines 5-23).

Dependant Claim 34 recites the inclusion of a tympanometry interface as one of the input/output interfaces of the device of Claim 29. (See: Page 9, line 31 – Page 10, line 8).

Dependant Claim 35 recites that the signal processor is further configured to transmit at least one stimulus signal through the input/output interface for each auditory test procedure. (See: Page 8, lines 28-30; Page 9, lines 7-9; Page 11, lines 11-14).

Each of the newly added dependant Claims 30-34 depends either directly or indirectly from new independent Claim 29, and hence is believed allowable over the prior art of record for the same reasons as set forth above.

5. Conclusion

Based on the foregoing, the allowance of Claims 1-6 and 8-35 is requested.

If for any reason the Examiner is unable to allow the application on the next Office Action and feels that an interview would be helpful to resolve any remaining issues, the Examiner is respectfully requested to contact the undersigned attorney for the purpose of arranging such an interview.

Respectfully submitted,

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